

## ABDOMINAL WOUNDS IN WAR TIME

Early rapid evacuation and early surgery is necessary not only to prevent infections but to save life. Mortality high even at best.

Classes of non-penetrating wounds: Blow or blast injuries - visceral rupture suggested by tenderness, rigidity, diminishing peristaltic sounds, collapse and shock and free air in peritoneal cavity (fractured spine and retroperitoneal hemorrhage may cause same symptoms).

Classes of penetrating wounds: Destruction of wall with visceral prolapse. Tiny wounds of entrance far removed from entrance of missile. Two wounds may mean either two entrance wounds or entrance and exit wound. Wound of entrance may be extra-abdominal, e.g. buttock, flank, thigh, or rectal (vaginal).

Examination of patient and prognostic signs: Observe pulse (rate, volume, pressure). Increasing rate may mean new hemorrhage, shock, peritonitis. Pulse of over 120 has bad prognosis. Rigidity of abdominal wall usually present. May or may not signify visceral injuries. Absence of rigidity with obvious wound is serious sign. Board-like rigidity means intestinal perforation.

Facies: Position and character of wound or wounds. Vomiting, x-ray for foreign bodies. Localization - air in peritoneal cavity.

Shock: (Treat before operating) - Associate chest wounds - indications for operation. In general, safer to explore when in doubt. If damaged, confine to solid viscera only. Patient may survive without operation. With perforation of hollow viscera, will not survive without operation. If no response to shock therapy, operation is out of the question. Wounds high over liver may be left alone if no sign of increasing hemorrhage or no retained foreign bodies, or with oesophageal or cardiac injury, or very late in coming to hospital.

Pre-operative care: Treat shock, gastric lavage. Operation, treat wound of abdominal wall as other wounds. Incision for repair of intra-abdominal injury (do not go through wound), plan to afford greatest exposure. Best incision, mid-line either above or below umbilicus. Transverse incision - excellent for wounds of liver, spleen, transverse colon, duodenum and pancreas.

Procedure: Stop hemorrhage first. Determine extent of damage.

Bowel - Examine large bowels first (be on lookout for extensive bruising of bowel and be sure to examine for retroperitoneal lesion of colon). Then run whole length of small bowels. Then examine the stomach and duodenum, then the solid viscera, liver, spleen, pancreas, kidney, and mesentery. Keep exposed viscera warm and moist. Management of lesions - determine extent of damage before attempting repair (always suture rather than re-sect). Isolate lesions and suture transversely. Re-sect only for multiple neighboring perforations. Complete destruction of blood supply.

Mesenteric injuries: Determine whether circulation of attached bowel is jeopardized. If so, re-sect bowel, stomach (often bleeds furiously). Local suture always unless forced to re-sect.

Liver - control hemorrhage by suture, muscle graft or packing.

Spleen - splenectomy is safest procedure (Hemarin may help prevent thrombosis).

Large Bowels - suture always unless blood supply is destroyed or colon is destroyed. Drain always and colectomy always.

Wounds of rectum and buttock: Expect rectal wound with all injuries of the buttock, bony pelvis, flank, or thigh, and in patients presenting signs of colon septemia (toxic pallor, delirium, fever).

(FOR THE BETTER OF THE PATIENT'S HEALTH)  
PAIN RELIEF, TREATMENT OF THE WOUND AND THE PREVENTION OF INFECTION ARE THE MAIN OBJECTS OF THE SURGERY  
MORPHINE OF THE WOUND AND THE PREVENTION OF INFECTION: EXPECT THE MAIN OBJECTS OF THE SURGERY

DISCUSS THE MAIN OBJECTS OF THE SURGERY.  
Adequate drainage of retroperitoneal tissues of pelvis offers only hope of recovery.  
Sulfenilamide: Local operation after injury of terminal ileum, colon, rectosigmoid, rectum and bladder 4 grams into abdominal wall at time of closure.

Pre-operative care: Morphine sufficient to control pain, Wangenstein suction instituted immediately after operation. Leave in until peristalsis is reestablished. Catheterize as necessary (every eight hours) if retention present.

Sulfenilamide: 8 grams in 0.8% solution subcutaneously the first 24 hours, thereafter dosage, (1 gram for the next 4 to 7 days).

Oxygen: Tent, nasal catheter or mask particularly after extensive operation on the upper abdominal and combined chest and abdominal injuries, exposed areas of the body.

Post-operative complications: Pelvic abscess not common. Signs and symptoms - those of abscess plus diarrhea, dysuria and tenderness, suprapubic or rectally. Open abscess but do not insert drain. Repeat if necessary.

Subdiaphragmatic abscess: Signs and symptoms those of abscess plus profuse sweating, pain in right upper quadrant, pain in breathing, suggesting pleurisy, tenderness over liver, displacement of liver and diaphragm as shown in x-ray. Drain site depends upon the location of the abscess.

Perinephric abscess: Evisceration - predisposition factors, nutritional, food, low intake or else vitamin. Mechanical distention, cough, poor closure, loss of abdominal wall, infection local or general. Suspect in every clean wound with serous discharge.

Treatment: Immediately cover wound with sterile towel and send patient at once to operating room. Operating room - complete anesthesia (ether preferable), wash bowel with warm saline, replace bowel, closure of bowel through and through with silk or steel suture.

Paralytic ileus: Decompression with Wangenstein suction and administration of oxygen.

Urinary retention: Catheterize, if no spontaneous irrigation.

Pulmonary embolism: Prophylaxis, deep breathing, carbon dioxide aeration, gentle handling of tissues.  
Examination of patient and blood counts: Organize nurse (late, morning, evening).

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